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**FEDERAL FACILITIES AGREEMENT
ATTACHMENT II SITE
SITE INVESTIGATION/DECISION DOCUMENT
PLATTSBURGH AIR FORCE BASE
PLATTSBURGH, NEW YORK**

**Draft Site Investigation/
Decision Document
Site SD-001
Golf Course Drainage Area**

AUGUST 1992

**PREPARED FOR:
U.S. ARMY CORPS OF ENGINEERS
KANSAS CITY DISTRICT
CONTRACT NO. DACA41-91-C-0121**

MALCOLM PIRNIE, INC.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

DEFINITION OF DATA QUALIFIERS

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1.0 INTRODUCTION

1.1 IRP BACKGROUND

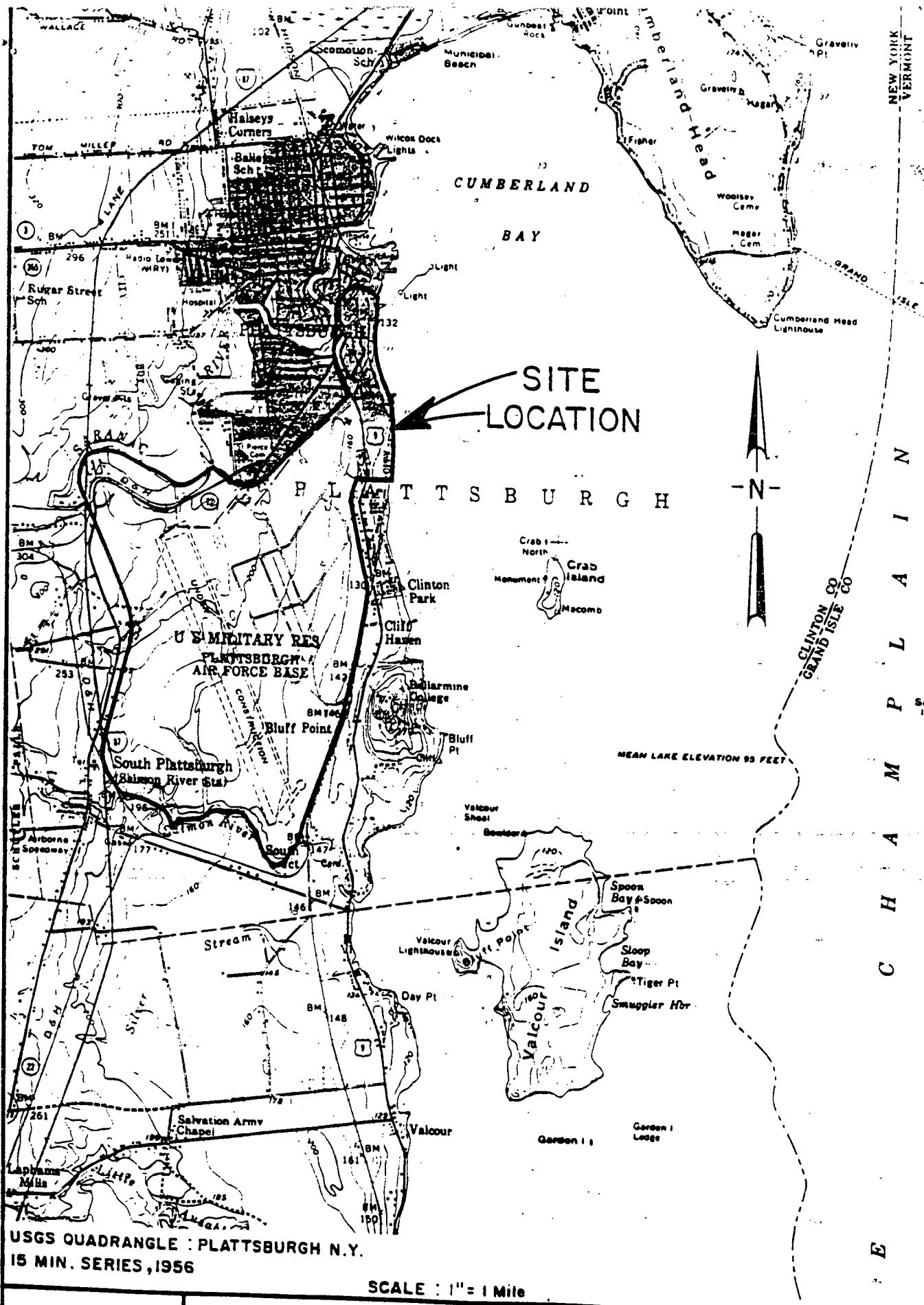
Investigation and remediation activities at Department of Defense (DOD) facilities were initiated by the DOD to evaluate potential problems relating to suspected past releases of hazardous materials. The Installation Restoration Program (IRP), under which this Site Investigation/Decision Document for SD-001 has been prepared, was developed as a component of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and amended by the 1986 Superfund Amendments and Reauthorization Act (SARA). An Interagency Federal Facilities Agreement (II-CERCLA-FFA-10201) effective September 12, 1991 was established between the New York State Department of Environmental Conservation (NYSDEC), the United States Environmental Protection Agency (USEPA), and the United States Air Force (USAF) for the IRP.

1.2 PROJECT PURPOSE

This Site Investigation/Decision Document describes the physical features of the Plattsburgh Air Force Base (PAFB) Golf Course Drainage (GCD) area SD-001, presents the results of previous field investigations, results of qualitative public health and ecological hazard assessments of the site, and proposes rationale for eliminating the site from further remedial considerations. Although the SD-001 site is not being considered for further remedial action, Plattsburgh AFB continues to monitor this drainage area as part of the State Pollution Discharge Elimination System Permit (NYSDEC, 1991c).

1.3 PROJECT INTRODUCTION

Figure 1-1 is a site location map of PAFB. The proximity of site SD-001 to other PAFB sites is shown in Figure 1-2. As indicated, the site is located on the east side of the base and southeast of the flightline industrial area. The drainage system, consisting of a series of ponds and streams, is the focus of this study. Before discharging into Lake Champlain, which is located approximately 1,200 feet east of the base property boundary, the drainage system traverses the golf course and Cliff Haven housing development.



**USGS QUADRANGLE : PLATTSBURGH N.Y.
15 MIN. SERIES. 1956**

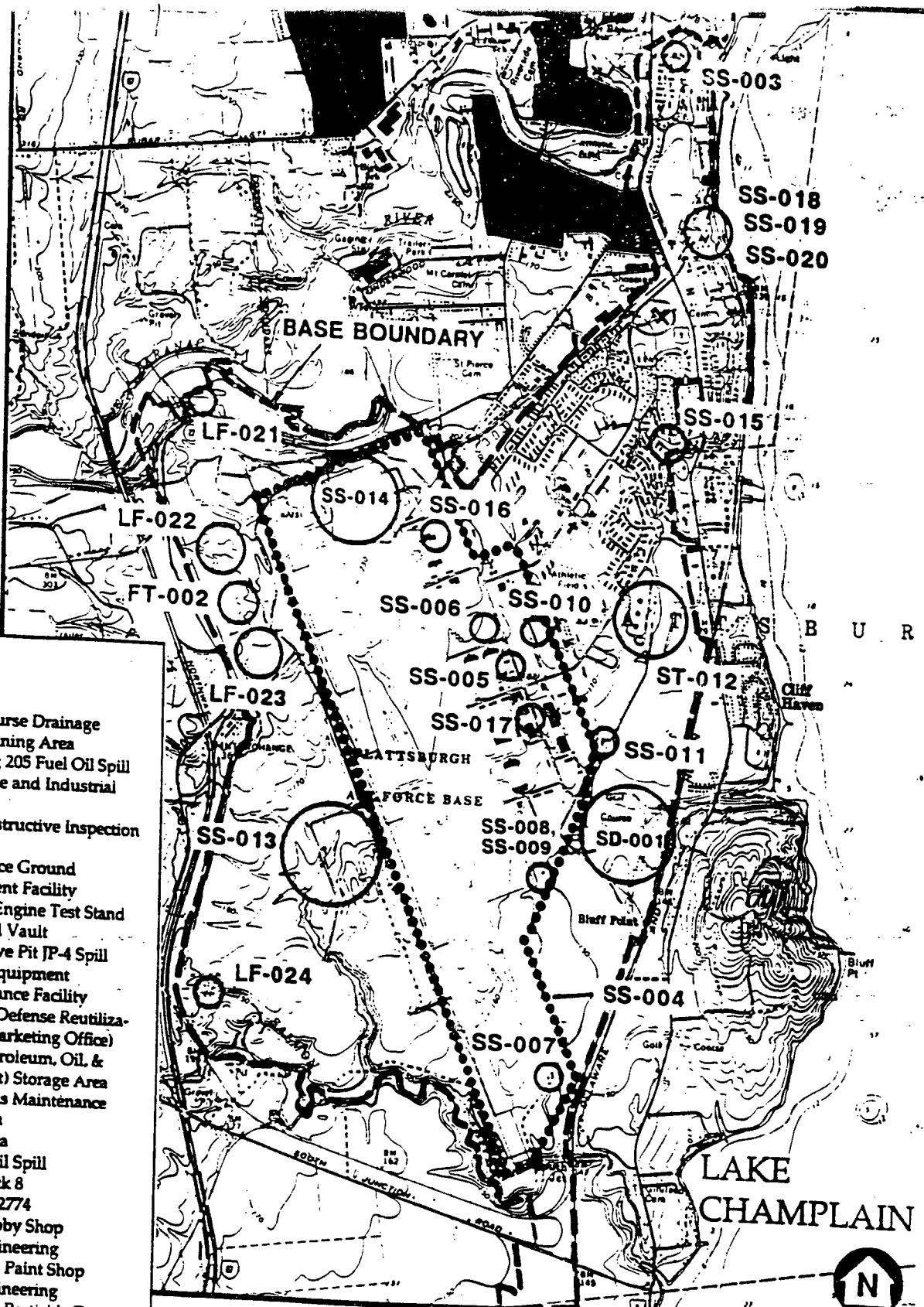
SCALE : 1" = 1 Mile

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FIGURE 1 - 1



SITE LIST

- | | |
|--------|---|
| SD-001 | Golf Course Drainage |
| FT-002 | Fire Training Area |
| SS-003 | Building 205 Fuel Oil Spill |
| SS-004 | Flightline and Industrial Area |
| SS-005 | Non-Destructive Inspection Facility |
| SS-006 | Aerospace Ground Equipment Facility |
| SS-007 | Former Engine Test Stand |
| SS-008 | Electrical Vault |
| SS-009 | Fuel Valve Pit JP-4 Spill |
| SS-010 | Heavy Equipment Maintenance Facility |
| SS-011 | DRMO (Defense Reutilization & Marketing Office) |
| SS-012 | POL (Petroleum, Oil, & Lubricant) Storage Area |
| SS-013 | Munitions Maintenance Squadron |
| SS-014 | Alert Area |
| SS-015 | Engine Oil Spill |
| SS-016 | Nose Dock 8 |
| SS-017 | Building 2774 |
| SS-018 | Auto Hobby Shop |
| SS-019 | Civil Engineering Squadron Paint Shop |
| SS-020 | Civil Engineering Squadron Pesticide Tank |
| LF-021 | Former Landfill 1956-1959 |
| LF-022 | Former Landfill 1959-1966 |
| LF-023 | Former Landfill 1966-1981 |
| LF-024 | Construction Spoils Landfill 1980-1986 |



**US Army Corps
of Engineers**

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PLATTSBURGH, NEW YORK**

IRP SITES

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FIGURE 1-2

Detected or potential contaminants at the site include solvents, fuels, pesticides, and metals. Previous field investigations at the site indicate that primarily petroleum-related contaminants enter the drainage system from upstream locations (e.g., SS-004 Flightline and Industrial Area) and are transported to the golf course drainage system via surface water and ground water.

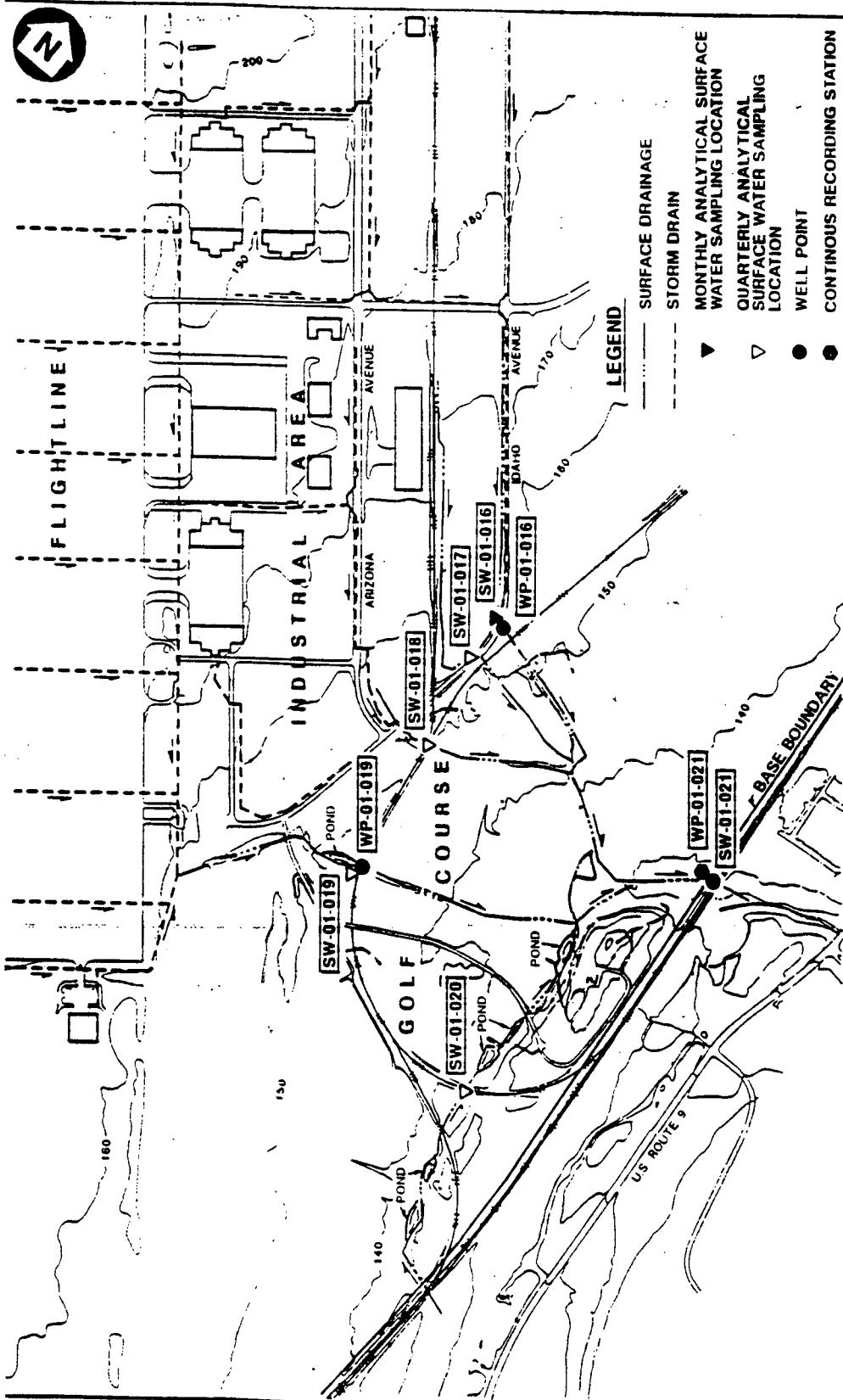
The drainage system is classified by the New York State Department of Environmental Conservation (NYSDEC) as a Class D surface water body. The Class D designation is intended to provide best usage protection for fish survival or wildlife consumption of fish ("Ambient Water Quality Standards and Guidance Values," NYSDEC, November 1991).

2.0 PHYSICAL CHARACTERISTICS OF THE SD-001 DRAINAGE AREA

Relief across the site is low with a gentle slope from west (160 feet above mean sea level, MSL) to east (125 feet MSL). Based on previous investigations and visual observations along incised stream channel sections, the uppermost geologic unit consists of approximately 3 to 10 feet of sand (see ABB Environmental Services, "Drainage Flow Study Report," 1991). The sand is underlain by a marine clay unit estimated to be at least 20 feet thick. Surface water channels traversing the golf course have eroded down to the clay unit.

Ground water is believed to be the principal source of water for these surface drainages (ABB Environmental, 1991). This is supported by the relatively constant stage and temperature measured at the surface drainage locations. Additionally, precipitation enters the drainage system by direct overland flow from the golf course and bordering vegetated areas, and from runoff diverted from the flight ramp and peripheral industrial areas. Figure 2-1, prepared by E.C. Jordan, September 1991, presents the surface drainage patterns and storm drain routes that discharge to, and traverse the Golf Course Drainage Site. Figure 2-2, developed by E.C. Jordan, September 1991, presents the conceptual site model for SD-001. As indicated in these figures, the majority of storm drainage, and any associated contaminants, that enter the Golf Course Drainage Site is from the flightline and industrial areas located upgradient of the SD-001 site.

Figure 2-3 presents the locations of the drainage ditches and retention ponds that make up the SD-001 site. The majority of stormwater runoff from the flight ramp flows through a series of three retention ponds located in the southernmost portion of the SD-001 drainage area. Two of the upstream ponds are equipped with sorbent booms to trap any floating oil. In the northern portion of the SD-001 drainage area, where base operation support facilities are located, drainage flows easterly across the golf course through three drainage ditches. A single retention pond is located downstream of this area.



**SAMPLING AND WELL POINT LOCATIONS: SD-001
DRAINAGE FLOW STUDY REPORT
PLATTSBURGH AFB**

ECJORDANCO

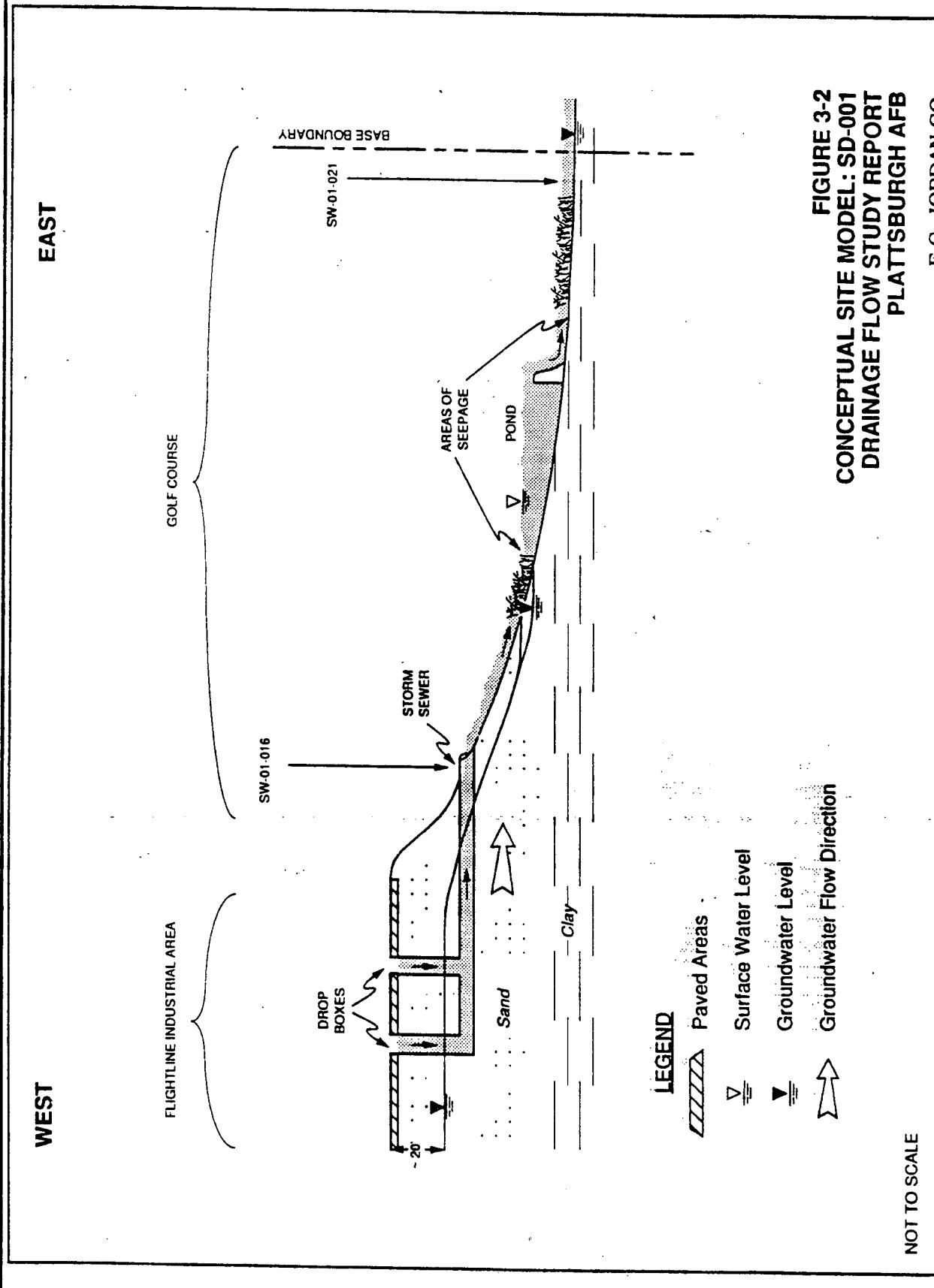
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GOLF COURSE DRAINAGE AREA, SD-001
SURFACE AND STORM DRAINAGE PATTERNS
PLATTSBURGH AIR FORCE BASE
USAFC CONTRACT NO. DACA41-91-C-0121

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FIGURE 2-1

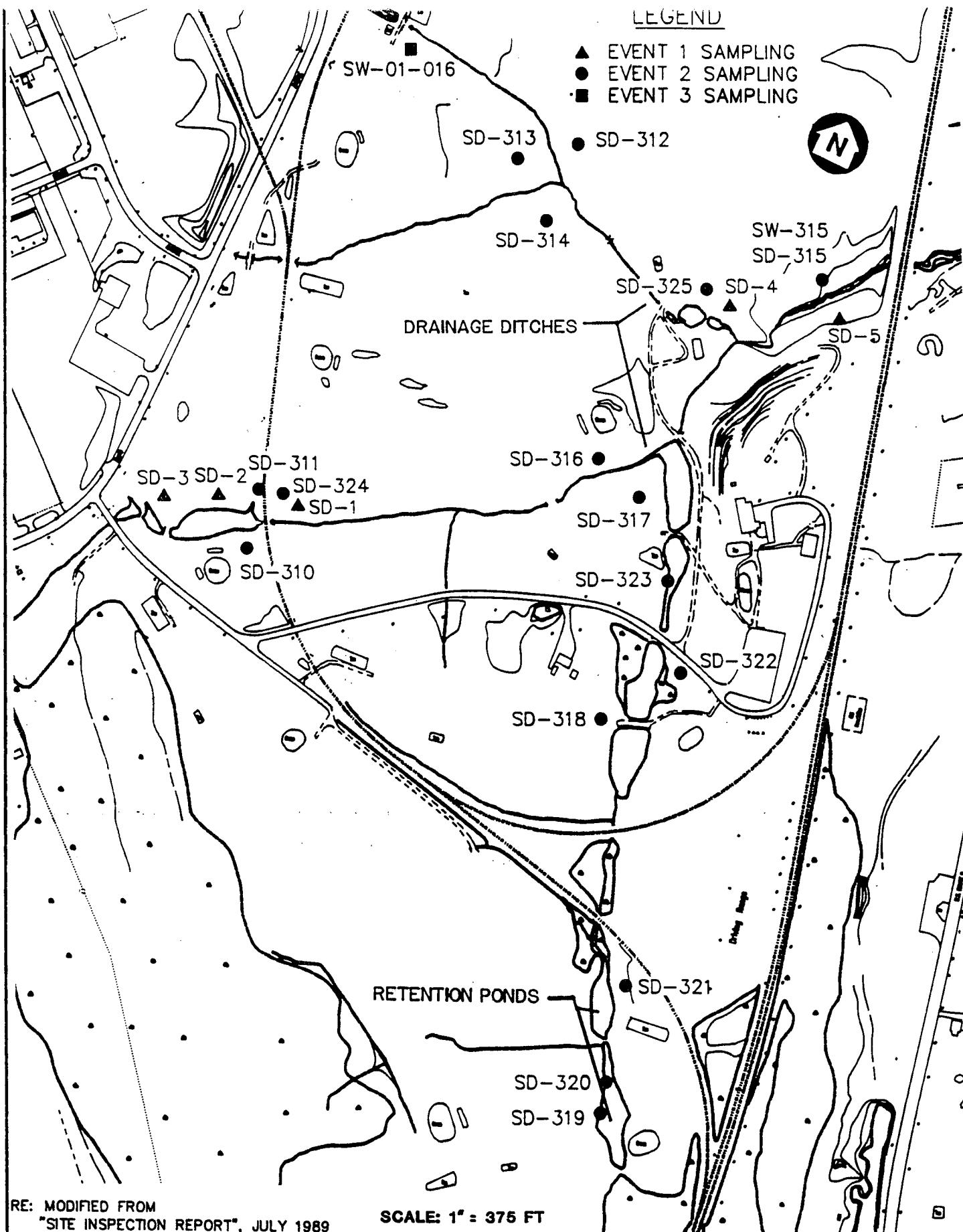


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FIGURE 2-2

PLATTSBURGH AIR FORCE BASE
USACE CONTRACT NO. DACA41-91-C-0121

CONCEPTUAL MODEL



U.S. Army Corps
of Engineers

GOLF COURSE DRAINAGE AREA, SD-001
PLATTSBURGH AIR FORCE BASE
USACE CONTRACT NO. DACA41-91-C-0121

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FIGURE 2-3

3.0 PREVIOUS INVESTIGATIONS

E.C. Jordan/ABB Environmental Services have conducted three surface water and sediment sampling studies at the site: (1) Initial Monitoring (1984-1987); (2) Phase II Quantification, based on a Final Work Plan (1988); and (3) Drainage Flow Study Report (1989-1990). Analytical data and sampling location maps from these reports are compiled in Appendices A, B, and C. The following sections summarize the results of each sampling event and present a data summary table. The summary tables include data for constituents detected above the analytical laboratories Contract Required Detection Limit (CRDL) and above the NYSDEC's proposed Cleanup Criteria for Aquatic Sediments (see "Draft Cleanup Policy and Guidelines Volume II - Appendix," NYSDEC, October 1991). The significance of specific contaminants as they relate to potential risks to human and ecological receptors is addressed in Section 4.0.

3.1 SAMPLING EVENT 1 - INITIAL MONITORING (1984-1987)

From June 1984 through September 1987, PAFB initiated monitoring of stream water quality on a quarterly basis at five locations along the drainage system (Figure A-1, Appendix A). The analytical data are reported in the E.C. Jordan document, "Installation Restoration Program - Site Inspection Report - Final" (July 1989). In addition to surface water monitoring, five sediment samples were taken during November 1987.

Table 3.1 presents a summary of the surface water analytical data. Chemical parameters analyzed include oil and grease, volatile organic halocarbons (VOHs), and volatile organic aromatics (VOAs). Table 3.1 indicates that oil and grease concentrations were highest in the first retention pond, ranging from 0.3 to 1000 ppm, with an average of 40.1 ppm. Other locations apparently receive less frequent and lower concentrations of these constituents, with the mean concentrations ranging from 0.45 to 9.92 ppm. The ranges of mean concentrations of total VOHs (1.8 - 6.02 ppb) and VOAs (0.62 - 2.3 ppb) were lower than oil and grease concentrations.

All five sediment samples were analyzed for volatile organic compounds (VOCs), pesticides, PCBs, and lead; one sample (SD-5) was also analyzed for various inorganic parameters; two samples were also analyzed for semi-volatile organic compounds (SVOCs); and three samples were also analyzed for petroleum hydrocarbons (PHCs). Three VOCs

Table 3.1*
Summary of Results of Plattsburgh AFB
Quarterly Monitoring**

Sample Location	Oil and Grease (mg/L)	Total Volatile	
		Halocarbons*** ($\mu\text{g}/\text{L}$)	Aromatic ($\mu\text{g}/\text{L}$)
First Retention Pond (0159-NS-002)	40.1 (<0.3-1000)	5.95 (ND-56.9)	0.62 (ND-3.9)
Stream Flow on Plattsburgh AFB (0159-NS-006)	1.19 (<0.3-5.0)	6.02 (ND-65.4)	0.62 (ND-10.6)
Maintenance Holding Pond (0059-NS-005)	2.64 (<0.3-20)	3.88 (ND-27.8)	0.81 (ND-15.0)
Golf Course Drainage at Base Boundary (0159-NS-003)	9.92 (<0.3-244)	1.8 (ND-16.3)	2.3 (ND-35.2)
Discharge at Cliff Haven Beach (0159-NS-009)	0.45 (<0.3-1.4)	3.08 (ND-18.2)	0.84 (ND-7.6)

Notes:

* Reproduced from E.C. Jordan, "Installation Restoration Program - Site Inspection Report - Final" (July, 1989), Table 16.1.

** Mean and range (range in parentheses). Data from OEHL, summarized by Plattsburgh AFB.

*** Includes results containing high levels of methylene chloride and chloroform which are common laboratory contaminants.

(chloroform, methylene chloride, acetone) were detected; however, since these constituents were detected in laboratory blanks, they are attributed to laboratory contamination. Table 3.2 indicates that pesticides (beta-BHC, DDT, DDD) were detected in three samples, with concentrations ranging from 22 to 370 ppb. The pesticide compounds may be attributed to previous golf course practices and are likely indicative of residual concentrations. PCBs were not detected in any of the five samples. SD-1, SD-2, and SD-4 contained lead at concentrations of 126, 70, and 76 ppm, respectively. These concentrations are generally elevated above background concentrations (55 ppm, Ontario Ministry of the Environment, 1988 in NYSDEC, 1991b) found in typical Plattsburgh soils (E.C. Jordan, 1989b). Trace levels of mercury (0.16 ppm) were detected in SD-5. SD-1, in the flightline stream, contained trace levels of two PAHs near or just below the CRDL; while bis(2-ethylhexyl)phthalate was detected above the CRDL. PHC levels from SD-2, SD-3, and SD-4 (1,500, 270, and 2,900 ppm, respectively) indicate the periodic (intermittent) impact of fuels to the drainage system.

3.2 SAMPLING EVENT 2 - PHASE II QUANTIFICATION - FINAL WORK PLAN (1988)

In October 1988, a "Phase II Quantification - Final Work Plan" was prepared by E.C. Jordan. The field work proposed entailed surface water sampling from ten locations and sediment sampling from sixteen locations. The sampling was conducted in November, 1988, and the analytical data are presented in the E.C. Jordan document "RI/FS - Validated Data Five Priority Sites" (August 1989).

A summary of the analytical data for surface water and sediment samples (including duplicates) obtained in the golf course drainage area is presented in Table 3.3. All samples collected were analyzed for VOCs, SVOCs, pesticides, PCBs, and PHCs. In addition, one sediment and one surface water sample were analyzed for Target Analyte List (TAL) metals.

Only eight surface water samples were taken instead of the ten proposed. No VOCs, SVOCs, pesticides, or PCBs were detected above the CRDL for any of the surface water samples. In the sample analyzed for metals, only iron (1100 ppb) was detected above the Class D surface water quality standard (300 ppb).

Table 3.2

Event 1 – Summary of Sediment Analytical Data (SD-001)
Sampled: 11/17/87

Location	Units	SD-1	SD-2	SD-3	SD-4	SD-5
Inorganic Compounds						
Mercury	mg/kg	NR	NR	NR	NR	0.16 N
Lead	mg/kg	126	70	9.2	76	6.3
Semivolatile Organic Compounds						
Benzo(b)Floranthene	µg/kg	1000 X	NR	NR	NR	NR
Benzo(k)Flouranthene	µg/kg	1000 X	NR	NR	NR	NR
bis(2-Ethylhexyl)Phthalate	µg/kg	4200	NR	NR	NR	130 J
Pesticides/PCB						
BETA-BHC	µg/kg	22	—	—	—	—
4,4'-DDT	µg/kg	75	—	—	—	370
4,4'-DDD	µg/kg	76	—	39	—	—
Petroleum Hydrocarbons	mg/kg	NR	1500	270	2900	NR

Table 3.3
Event 2 – Summary of Sediment and Surface Water Analytical Data (SD-001)
Sampled: 11/16 – 11/17/88

Sample ID	Units	14SD010XXXX02XX	14SD011XXXX02XX	14SD012XXXX02XX	14SD013XXXX02XX	14SD014XXXX02XX	14SD015XXXX02DX	14SD016XXXX02DX	14SD017XXXX02XX	14SD018XXXX02XX	14SD019XXXX02XX	14SD020XXXX02XX	14SD021XXXX02XX	14SD022XXXX02XX	14SD023XXXX02XX
Semi-volatile Organic Compounds															
Fluoranthene															
Pyrene	µg/kg	970 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(a)Anthracene	µg/kg	940 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	µg/kg	1500 J	--	--	--	--	--	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/kg	800 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(b)Fluoranthene	µg/kg	970 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(k)Fluoranthene	µg/kg	1300 XJ	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(a)Pyrene	µg/kg	1300 XJ	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Iron (SW-315)	mg/kg	--	--	--	--	--	--	--	1100	1120	--	--	--	--	--
Manganese	mg/kg	--	--	--	--	--	--	501 J	--	--	--	--	--	--	--
Petroleum Hydrocarbons	mg/kg	600	2600	340	700	530	39	67	830	120					
Semi-volatile Organic Compounds															
Fluoranthene															
Pyrene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(a)Anthracene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(b)Fluoranthene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(k)Fluoranthene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benz(a)Pyrene	µg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons	mg/kg	120	510	300	33	370	51	130	940	940					

Table 3.3 summarizes the constituents that were detected above the CRDL for sediment samples. VOCs were not detected in any sediment sample. Of the eight samples analyzed, seven PAHs were detected in one sample (SD-310); bis(2-ethylhexyl)phthalate was detected in two samples (SD-310, SD-314). The concentrations of the eight SVOC constituents detected ranged from 490 to 1500 ppb. Pesticides (DDE, DDD, DDT) were detected in six sediment samples; the concentrations ranged from 34 to 410 ppb. Using NYSDEC'S proposed cleanup criteria for aquatic toxicity for freshwater sediments, and assuming a conservative organic carbon concentration of 1 percent, a partitioning analytical model indicates that the detected levels of pesticides would not exceed the criteria of 500 ppb. Again the data for pesticides was qualified as not meeting the laboratory quality assurance guidelines. Low levels of inorganics were reported in the one sediment sample analyzed for metals (SD-315, and SD-315 duplicate); only manganese (501 ppm) was reported above the NYSDEC'S proposed cleanup criteria (428 ppm) for freshwater sediments (NYSDEC, 1991b). The detection of PHCs in every sample may reflect the natural biodegradation of organic matter, rather than the presence of petroleum products (E.C. Jordan, 1989b).

3.3 SAMPLING EVENT 3 - DRAINAGE FLOW STUDY (1989-1990)

The most recent investigation of site SD-001 is summarized in the "Drainage Flow Study Report" (September 1991). The document, prepared by ABB Environmental Services Inc. (formerly E.C. Jordan), summarizes the results of the most comprehensive study of the drainage patterns, flow volumes, and surface water chemistry for the site. The investigation entailed monthly surface water sampling at six locations for one year to better explain irregular trends in the previous water quality data.

A summary of the analytical results of this investigation is presented in Table 3.4. One sample location (SW-01-017) was not sampled because it was dry year-round. Of the 34 samples taken over a one year period, only SW-01-016 contained detectable concentrations of VOCs and SVOCs. However, the detection of these chemicals was intermittent, with only one chemical (2-methylnaphthalene) detected more than twice. At SW-01-021, the sample location where individual drainage areas merge and all surface waters for this study area exit the base, no VOCs, SVOCs or TICs were detected.

Table 3.4

Event 3 – Summary of Surface Water Analytical Data (SD-001)
Sampled: 10/31/89 – 10/11/90

Site ID	Analyte Detected	Round	1Q	7	9	11
		Date	10/31/89	05/09/90	06/27/90	08/28/90
SW-01-016	Volatile Organic Compounds ($\mu\text{g/L}$)					
	1,2-Dichloroethene (Total)	6	--	--	--	--
	Semi-volatile Organic Compounds ($\mu\text{g/L}$)					
	4-Methylphenol	4	5	--	--	
	2-Methylnaphthalene	4	54	48	29	
	bis(2-Ethylhexyl)phthalate	92	--	--	--	
	Naphthalene	--	8	--	--	
	Fluorene	--	2	13	--	
	Phenanthrene	--	--	27	--	

4.0 HAZARD ASSESSMENT

This section presents the results of the qualitative public health and ecological hazard assessments based on site history, current usage of SD-001 and previous field investigations.

4.1 QUALITATIVE PUBLIC HEALTH HAZARD ASSESSMENT

The golf course drainage area SD-001 is a receptor site, receiving contaminants intermittently from upgradient industrial areas and the flightline. This is evidenced by the sporadic detection of certain chemicals in surface water samples. Because SD-001 encompasses a golf course, both children and adults have access to the area and may have recreational exposure to site contaminants. Workers at the site may have occupational exposure during maintenance activities, such as cleaning/clearing ditches.

The water in the drainage ditches is classified as Class D by NYSDEC; this classification is intended for the protection of fish or wildlife which consumes fish. For the purposes of a conservative hazard assessment, the levels of surface water contaminants are compared with criteria for Class A waters. Class A standards and criteria are human-health based and are considered protective of drinking water sources.

Only one VOC was detected in surface water samples from Site SD-001. SVOCs detected were primarily polycyclic aromatic hydrocarbons (PAHs). Several tentatively identified compounds (TIC), largely consisting of naphthalene derivatives, were detected in surface water samples. Since naphthalene is a component of some fuels, the presence of these chemicals is not unusual. Several pesticides and inorganic compounds were also found in the surface water.

There is no surface water standard for the VOC, 1,2-dichloroethene. However, the VOC, 1,2-dichloroethene, is regulated as a principal organic contaminant (POC) in ground water. The ground water standards are generally more stringent than surface water standards and the concentration of this compound in surface water essentially meets the POC standard of 5 ug/l.

In general, the concentrations of SVOCs are less than the criteria for Class A waters, indicating that the potential for adverse health effects is minimal. Although bis(2-ethylhexyl)phthalate exceeded its Class A criterion, a site-specific quantitative assessment indicates that the detected concentration does not present the potential for adverse health

effects. Toxicological data are inadequate to evaluate environmental exposure to 4-methylphenol and 2-methylnaphthalene. However, based on structural similarity to chemicals with an adequate data base (phenol and naphthalene), the concentrations of these chemicals are unlikely to pose a health hazard.

Concentrations of inorganics detected in surface water are insufficient to warrant concern. Although iron exceeds the Class A standards, surface waters in the golf course drainage area are Class D waters and are not used or classified as a drinking water source.

Sediment concentrations were compared to NYSDEC cleanup criteria for aquatic sediments (NYSDEC, 1989 in NYSDEC, 1991b) using the aquatic toxicity basis in freshwater and assuming 1% organic carbon content. The pesticides DDD, DDE and B-BHC are less than NYSDEC's proposed aquatic toxicity cleanup criteria for sediments, as are the SVOCs. Bis(2-ethylhexyl)phthalate exceeded sediment criteria for aquatic toxicity in freshwater in only one of the 18 samples tested.

Though there are no sediment cleanup criteria for PAHs, the PAHs are less than or within the background range expected for surface soils in an urban/industrial area. Chemicals reported as TICs were detected infrequently and, as recommended by USEPA (1989), the reported concentrations should not be considered in the assessment.

The concentrations of most inorganics in sediment are generally less than normal background levels in Great Lake sediments (Ontario Ministry of the Environment, 1988 in NYSDEC, 1991b), and are also less than background levels estimated by the USGS for soils in the eastern United States. Although the lead concentrations (ranging from 6 to 126 ppm in sediment samples) exceed the expected background levels for lead in Plattsburgh soils (E.C. Jordan, 1989) and for Great Lake sediments, they are much less than USEPA's interim cleanup criteria for lead in residential soils (500 to 1000 ppm). Because residential exposure would be expected to be greater than recreational exposures, the lead concentrations in sediment are unlikely to pose a health hazard.

Considering the levels of contaminants at the site and the infrequency of detection, the potential for adverse human health effects from exposure to site contaminants is minimal. Because contaminant concentrations in the drainage system are low and the contaminants are detected sporadically, migration of contaminants is not expected to pose a significant risk to human receptors off-base.

4.2 QUALITATIVE ECOLOGICAL HAZARD ASSESSMENT

Potential ecological receptors in the golf course drainage area (SD-001) include common terrestrial and aquatic species that may utilize the open areas and waters of the golf course. Due to the proximity of the site to developed areas, the lack of cover on site and the limited diversity of food as a result of frequent mowing of the golf course greens, usage of the area by terrestrial wildlife is expected to be limited. Fishery habitats within the base boundaries are considered to be extremely limited (Dietz, 1985 *in* ABB Environmental Services, 1991); however, ponds at the golf course are reported to support fish and invertebrates (ABB Environmental Services, 1991).

The compounds detected in surface water at Site SD-001 are generally less than values for Class A and/or Class D waters; iron, however, exceeds the NYSDEC Ambient Water Quality standard for Class D waters established for the protection of fish survival. The high concentrations of iron in surface water may be attributable to naturally-occurring background levels. Compounds detected in sediment samples are either less than background levels or less than cleanup criteria for soils. However, lead exceeds expected background levels in three of the sediment samples. As stated in the health hazard assessment, bis(2-ethylhexyl)phthalate exceeds sediment criteria for aquatic toxicity in only one of 18 samples tested.

The levels of iron in surface water are reasonable considering the range of background levels of iron expected to occur naturally in soils and sediments in the area. The level of iron found in the one surface water sample (plus a duplicate sample) yielded a concentration of 1100 ug/l (ppb); no other water samples were tested for iron. The USGS has determined that background levels of iron in soils in the eastern United States may be as high as 550,000 mg/kg (ppm). According to the Ontario Ministry of the Environment (1988 *in* NYSDEC, 1991b), pre-industrial background concentrations of iron are expected to be 5.9 percent (i.e., 59,000 ppm) in Great Lakes sediments. Though soil samples were not collected in the golf course drainage area, iron detected in three sediment samples (including one duplicate) ranged from 15,000 to 20,400 mg/kg (ppm). The Limit of Tolerance of iron in sediment is 4 percent by weight (i.e., 40,000 mg/kg (ppm)) (NYSDEC, 1991b); Limit of Tolerance is the concentration which would be detrimental to the majority of aquatic species, potentially eliminating most (Persaud, 1989 *in* NYSDEC, 1991). The concentrations of iron found in the golf course drainage sediment samples are well below

the Limit of Tolerance. The NYSDEC Sediment Criteria is 2.4 percent, or 24,000 mg/kg (ppm) (NYSDEC, 1991b); the "no-effect" level is considered to be 2 percent (i.e., 20,000 ppm) (Persaud, 1989 in NYSDEC, 1991b). The concentrations of iron in the sediment samples are below the sediment criteria and are essentially at the no-effect level.

Concentrations of lead in three of the six sediment samples exceed expected background levels in Great Lakes sediments (Ontario Ministry of the Environment, 1988 in NYSDEC, 1991b). However, the concentrations detected in the golf course drainage sediments, ranging from 6 to 126 ppm, are within the Limit of Tolerance for aquatic species (250 ppm) (Persaud, 1989 in NYSDEC, 1991b).

Consistent with the public health hazard assessment, the levels of contaminants on the site and the intermittent detection of these contaminants indicate minimal risk to terrestrial and aquatic wildlife. Furthermore, the low concentrations and sporadic detection of the contaminants minimizes the potential for migration of contaminants to terrestrial and wildlife receptors off-base. As reported in the "Drainage Flow Study Report" (September 1991), no VOCs, SVOCs or TICs were detected at the sampling location where all surface water from SD-001 exit the base.

5.0 RECOMMENDATION FOR NO FURTHER ACTION

The SD-001 site will not be recommended for further investigations by Plattsburgh AFB since the site conditions do not meet the requirements, a significant threat, as stipulated in Section 300.420(c)(i) of the National Contingency Plan (NCP).

No primary source of contamination has been identified within the boundaries of the site during previous site investigations; rather it appears that SD-001 receives contaminants intermittently from upgradient sites such as the flightline and industrial area.

A qualitative risk assessment for human and ecological receptors, indicates that the compounds pose "no threat to public health or the environment", since the concentrations of the compounds generally meet water and sediment criteria. Further analysis of the few compounds that do not meet the regulatory standards indicate that these compounds pose "no significant threat to public health or the environment" at the concentrations detected. It is recommended, therefore, that the SD-001 site be removed from further remedial investigation.

Plattsburgh AFB has concluded that the contamination detected at the SD-001 site is attributable to runoff and drainage from the upgradient flightline industrial area. Surface water that exits the study area (SD-001) does not contain VOC, SVOC or TIC compounds.

GLOSSARY OF ACRONYMS

AFB	Air Force Base
CRDL	Contract Required Detection Limit
DDD	dichlorodiphenyl dichloroethane
DDE	dichlorodiphenyl dichloroethene
DDT	dichlorodiphenyl trichloroethane
IRP	Installation Restoration Program
NYSDEC	New York State Department of Environmental Conservation
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PHC	petroleum hydrocarbon
ppb	parts per billion
RI	Remedial Investigation
SI	Site Investigation
SVOC	semivolatile organic compound
TAL	Target Analyte List
TCL	Target Compound List
VOA	Volatile organic aromatics
VOC	volatile organic compound
VOH	volatile organic halocarbon

DATA QUALIFIER KEY

Organic Data Qualifiers (Flags):

- C - GC results were confirmed by mass spectrometry.
- J - Indicates an estimated value because value is below the contract CRDL or all quality assurance criteria were not met during analysis.
- JJ - Validation flag for values below CRDL only.
- U - Indicates that parameter was analyzed for but not detected at the concentration value preceding the qualifier.
- UJ - Non-detect result was estimated; QC not acceptable.
- B - Indicates the analyte was detected in both the sample and associated method blank.
- UJB - Non-detect; detection limit was adjusted for blank combination.
- E - Indicates that the concentration reported exceeded the calibration range of the analysis method and that sample should have been diluted and reanalyzed.
- D - Indicates that the sample required dilution prior to analysis to bring the detected value within the calibration range of the method of analysis.
- ND - Not Detected.
- NR - Not Requested.
- R - Indicates that data are not useable because quality control criteria were not met.
- *R - See "R" above.
- **R - See "R" above.
- UR - Non-detected result was rejected; QC not acceptable.
- X - Indicates that a combination of flags were required or that the sample required additional notes not covered by other flags.

Inorganic Data Qualifiers (Flags):

- E - The reported values is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).
- M - Duplicate injection precision not met.
- N - Spiked sample recovery not within control limits.

REFERENCES

- ABB Environmental Services Inc. 1991. "Installation Restoration Program - Drainage Flow Study Report"; prepared for U.S. Department of Energy, September 1991.
- E.C. Jordan. 1988. "Installation Restoration Program Phase II Quantification - Final Work Plan"; prepared for U.S. Department of Energy, October 1988.
- E.C. Jordan. 1989a. "Installation Restoration Program Remedial Investigation/Feasibility Study - Validated Data Five Priority Sites"; prepared for U.S. Department of Energy, August 1989.
- E.C. Jordan. 1989b. "Installation Restoration Program - Site Inspection Report"; prepared for U.S. Department of Energy, July 1989.
- NYSDEC . 1991a. "Ambient Water Quality Standards and Guidance Values"; prepared by Division of Water Technical and Operational Guidance Series (1.1.1), November 1991.
- NYSDEC. 1991b. "Draft Cleanup Policy and Guidelines Volume II - Appendix"; October 1991. Aquatic sediment criteria was promulgated December 1989.
- NYSDEC. 1991c. On file with NYSDEC, State Pollutant Discharge Elimination System Permit Number (021-7905), DEC Number (5-0942-00039/00001-0).
- USEPA. 1989. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual. EPA 540/1-89/002, December 1989.

APPENDIX A

IRP Site Investigation - Final (1988)

(Analytical data as reported by E.C. Jordan Inc.)

FIGURE A-1

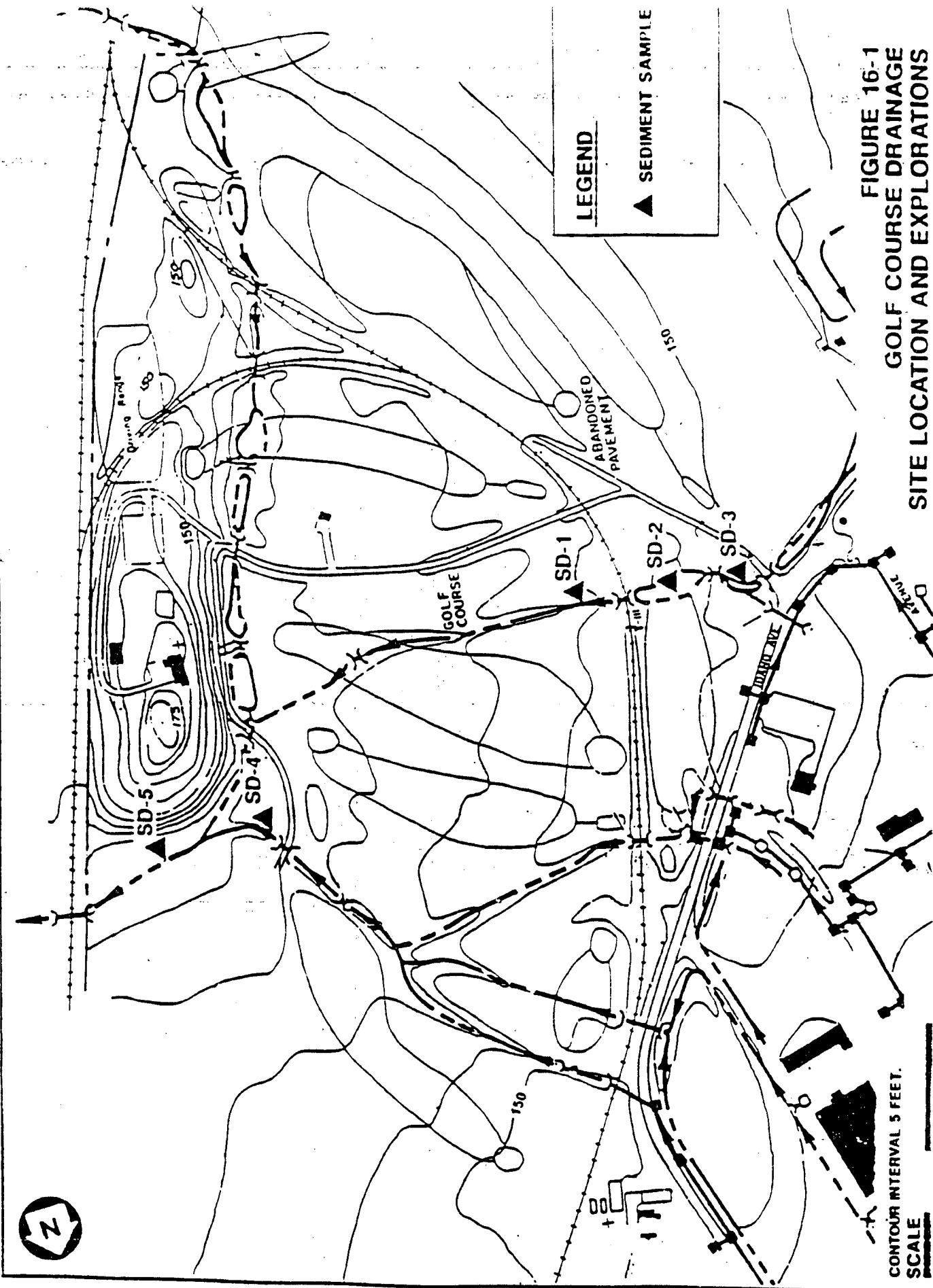


FIGURE 16-1
GOLF COURSE DRAINAGE
SITE LOCATION AND EXPLORATIONS

TABLE 16-1
SUMMARY OF RESULTS OF PLATTSBURGH AFB
QUARTERLY MONITORING*

Sample Location	<u>Oil and Grease</u> (mg/L)	<u>Total Volatile</u> <u>Halocarbons**</u> (μ g/L)	<u>Aromatic</u> (μ g/L)
First Retention Pond (0159-NS-002)	40.1 (<0.3-1000)	5.95 (ND-56.9)	0.62 (ND-3.9)
Stream Flow on to Plattsburgh AFB (0159-NS-006)	1.19 (<0.3-5.0)	6.04 (ND-65.4)	0.62 (ND-10.6)
Maintenance Holding Pond (0059-NS-005)	2.64 (<0.3-20)	3.88 (ND-27.8)	0.81 (ND-15.0)
Golf Course Drainage at Base Boundary (0159-NS-003)	9.92 (<0.3-244)	1.8 (ND-16.3)	2.3 (ND-35.2)
Discharge at Cliff Haven Beach (0159-NS-009)	0.45 (<0.3-1.4)	3.08 (ND-18.2)	0.84 (ND-7.6)

* Mean and range (range in parentheses). Data from OEHL, summarized by Plattsburgh AFB.

** Includes results containing high levels of methylene chloride and chloroform which are common laboratory contaminants.

TABLE 16-2

GCD - SEDIMENT SAMPLES

LOCATION:	SD-1	SD-2	SD-3	SD-4
SAMPLE ID:	JSP3SD01x1	JSP3SD02x1	JSP3SD03x1	JSP3SD04x1
DATE SAMPLED:	11/17/87	11/17/87	11/17/87	11/17/87
DEPTH (ft.):	0	0	0	0
MATRIX:	SOIL	SOIL	SOIL	SOIL
ANALYTICAL CRDL METHOD	mg/kg	mg/kg	mg/kg	mg/kg
INORGANIC COMPOUNDS				
Aluminum	P	40	NR	NR
Arsenic	F	2	NR	NR
Barium	P	40	NR	NR
Beryllium	P	1	NR	NR
Calcium	P	1000	NR	NR
Chromium	P	2	NR	NR
Cobalt	P	10	NR	NR
Copper	P	5	NR	NR
Iron	P	20	NR	NR
Magnesium	P	1000	NR	NR
Manganese	P	3	NR	NR
Mercury	CV	0.06	NR	NR
Nickel	P	6	NR	NR
Potassium	P	1000	NR	NR
Sodium	P	1000	NR	NR
Thallium	F	2	NR	NR
Vanadium	P	10	NR	NR
Zinc	P	4	NR	NR
Lead	P/F	1	126	70
ASSOCIATED BLANK:		132290	13229A	13229A
VOLATILE ORGANIC COMPOUNDS	CRDL	mg/kg	mg/kg	mg/kg
Chloroform	5	33 B	26 B	10 B
Methylene Chloride	5	160 B	23 JB	16 B
Acetone	10			
DILUTION FACTOR:		1	1	1
ASSOCIATED BLANK:	VBLK1128 GB871128A11	VBLK1128 GB871128A19	VBLK1128 GB871128A19	VBLK1128 GE871128C19

TABLE 16-2 (cont.)

GCD - SEDIMENT SAMPLES

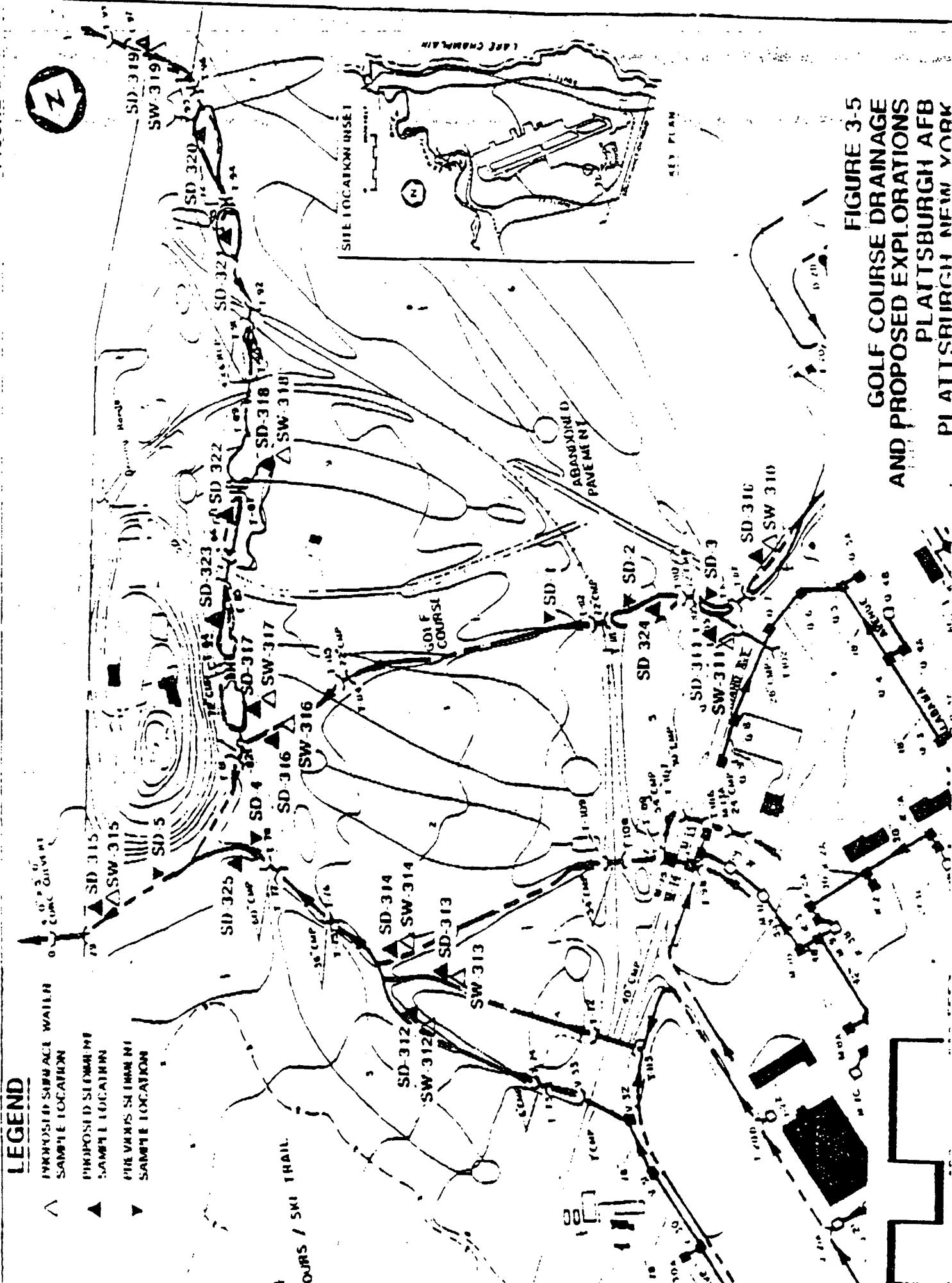
LOCATION:	SD-1	DATE SAMPLED:	JSP3SD01x1 11/17/87	DEPTH (FT.):	0	MATRIX:	SOIL	CRL	SD-2	SD-3	SD-4	SD-5
SAMPLE ID:	JSP3SD01x1	DATE SAMPLED:	JSP3SD02x1 11/17/87	DEPTH (FT.):	0	MATRIX:	SOIL	CRL	JSP3SD03x1 11/17/87	JSP3SD04x1 11/17/87	JSP3SD05x1 11/17/87	JSP3SD06x1 11/17/87
SEMIVOLATILE ORGANIC COMPOUNDS ug/g												
Benzo(a)Anthracene	330		200	J				NR	NR	NR	NR	NR
Benzo(a)Pyrene	330		180	J				NR	NR	NR	NR	NR
Benzo(b)Fluoranthene	330		1000	X				NR	NR	NR	NR	NR
Benzo(k)Fluoranthene	330		1000	X				NR	NR	NR	NR	NR
bis(2-Ethylhexyl)Phthalate	330		4200					NR	NR	NR	NR	NR
Chrysene	330		260	J				NR	NR	NR	NR	NR
Fluoranthene	330		320	J				NR	NR	NR	NR	NR
Phenanthrene	330		260	J				NR	NR	NR	NR	NR
Pyrene	330		310	J				NR	NR	NR	NR	NR
DILUTION FACTOR:			62.1									1
ASSOCIATED BLANK: SVBLK168828												
PESTICIDES/PCB	CRL	ASSOCIATED BLANK:	PBLK168827	PBLK169020	PBLK169020	PBLK169020	PBLK169020	PBLK169020	PBLK169020	PBLK169020	PBLK170640	PBLK170640
BETA-BHC	8		22	4	-	-	-	-	-	-	370	-
6,6'-DDT	16		75	-	-	-	-	39	-	-	-	-
4,4'-DDD	16		76	-	-	-	-	-	-	-	-	-
DILUTION FACTOR:	1		2		1			4		4		1
PETROLEUM HYDROCARBONS (mg/kg)												
pH	7.33		-				7.33			7.18		7.07
Percent Solids	54		37				77			48		70
Percent Moisture, Undecanted	45		63				21			52		33

APPENDIX B

RI/FS - Validated Data Five Priority Sites (1989)

(Analytical data as reported by E.C. Jordan Inc.)

FIGURE B-1



Summary Table

	VOLATILE ORGANIC COMPOUNDS UNITS: ug/L	CRDL
SAMPLE ID:	14SWJ310XXXX02XX	14SWJ312XXXX02XX
LAB NUMBER:	230827	230848
DATE SAMPLED:	11/16/88	11/16/88
DATE SAMPLE PREP.:	11/22/88	11/23/88
DATE SAMPLE ANALYZED:	11/22/88	11/22/88
MATRIX:	Water	Water

VOLATILE ORGANIC COMPOUNDS
UNITS: ug/L

Chloromethane	10	R
Bromomethane	10	R
Vinyl Chloride	10	R
Chloroethane	10	R
Methylene Chloride	5	R
Acetone	5	R
Carbon Disulfide	5	R
1,1-Dichloroethene	5	R
1,1-Dichloroethane	5	R
1,2-Dichloroethene (total)	5	R
Chloroform	5	R
1,2-Dichloroethane	5	R
2-Butanone	10	R
1,1,1-Trichloroethane	5	R
Carbon Tetrachloride	5	R
Vinyl Acetate	10	R
Bromodichloromethane	5	R
1,2-Dichloropropane	5	R
Cis-1,3-Dichloropropene	5	R
Trichloroethene	5	R
O-bromo-chloromethane	5	R
1,1,2-Trichloroethane	5	R
Benzene	5	R
Trans-1,3-Dichloropropene	5	R
Bromoform	10	R
6-Methyl-2-Pentanone	10	R
2-Hexanone	10	R
Tetrachloroethene	5	R
1,1,2,2-Tetrachloroethane	5	R
Toluene	5	R
Chlorobenzene	5	R
Ethylbenzene	5	R
Styrene	5	R
Xylenes (total)	5	R

Dilution Factor

00681121B19	CB881122A19	CB881122A19	CB881122A19	CD881122A19
00TB100XXXX02XX	00TB100XXXX02XX	00TB100XXXX02XX	00TB100XXXX02XX	00TB100XXXX02XX
00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX
00D1001XXX01XX	00D1001XXX01XX	00D1001XXX01XX	00D1001XXX01XX	00D1001XXX01XX
00PW001XXX01XX	00PW001XXX01XX	00PW001XXX01XX	00PW001XXX01XX	00PW001XXX01XX

PROJECT: Plattsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

VOLATILE ORGANIC COMPOUNDS UNITS: ug/L	CRDL	
Chloromethane	10	6
Bromomethane	10	
Vinyl Chloride	10	
Chloroethane	10	
Methylene Chloride	5	
Acetone	10	
Carbon Disulfide	5	
1,1-Dichloroethene	5	
1,1-Dichloroethane	5	
1,2-Dichloroethene (total)	5	
Chloroform	5	
1,2-Dichloroethane	5	
2-Butanone	10	
1,1,1-Trichloroethane	5	
Carbon Tetrachloride	5	
Vinyl Acetate	10	
Bromodichloromethane	5	
1,2-Dichloropropane	5	
cis-1,3-Dichloropropene	5	
Trichloroethene	5	
Dibromoacetonitrile	5	
1,1,2-Trichloroethane	5	
Benzene	5	
Trans-1,3-Dichloropropene	5	
Bromoform	5	
4-Methyl-2-Pentanone	10	
2-Hexanone	10	
Tetrachloroethene	5	
1,1,2,2-Tetrachloroethane	5	
Toluene	5	
Chlorobenzene	5	
Ethylbenzene	5	
Styrene	5	
Xylenes (Total)	5	
Dilution Factor	1	
Laboratory Method Blank	CB881122A19	
Associated Trip Blank	00TB100XXX02XX	
Associated Field Blanks	00MH001XXX01XX	
	00D100XXX01XX	
	00PW001XXX01XX	

PROJECT : Pittsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

10-4111-88

Summary Table

SAMPLE ID:	14SW310XXX02XX	14SW312XXX02XX	14SW316XXX02XX	14SW315XXX02XX	14SW317XXX02XX
LAB NUMBER:	230827	230848	230834	230839	230835
DATE SAMPLED:	11/17/88	11/16/88	11/16/88	11/17/88	11/16/88
DATE SAMPLE PREP.:	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88
DATE SAMPLE ANALYZED:	12/03/88	12/03/88	12/03/88	12/03/88	12/03/88
MATRIX:	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS					
CRDL					
Phenol	10				
bis(2-Chloroethyl)ether	10				
2-Chlorophenol	10				
1,3-Dichlorobenzene	10				
1,4-Dichlorobenzene	10				
Benzyl alcohol	10				
1,2-Dichlorobenzene	10				
2-Methylphenol	10				
bis(2-Chloroisopropyl)ether	10				
4-Methylphenol	10				
N-Nitroso-di-n-propylamine	10				
Hexachloroethane	10				
Nitrobenzene	10				
Isophorone	10				
2-Nitrophenol	10				
2,4-Dimethylphenol	10				
Benzoic acid	50				
bis(2-Chloroethoxy)methane	10				
2,6-Dichlorophenol	10				
1,2,4-Trichlorobenzene	10				
Naphthalene	10				
4-Chloronaphthalene	10				
Heptachlorobutadiene	10				
2-Methyl naphthalene	10				
4-Chloro-3-Methylphenol	10				
2,4-Dichlorocyclohexadiene	10				
2,4,6-Trichlorophenol	10				
2,4,5-Trichlorophenol	50				
Chloronapthalene	10				
2-Nitroaniline	50				
Acenaphthylene	10				
6-Dinitrotoluene	10				

PROJECT: Pittsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD

Summary Table

PROJECT: Plattsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

10-Aug-89

Summary Table

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/L		CRDL
Phenol	10	
bis(2-Chloroethyl)ether	10	
2-Chlorophenol	10	
1,3-Dichlorobenzene	10	
1,4-Dichlorobenzene	10	
Benzyl alcohol	10	
1,2-Dichlorobenzene	10	
2-Methylphenol	10	
bis(2-Chloroisopropyl)ether	10	
4-Methylphenol	10	
N-Nitroso-di-n-propylamine	10	
Methylchloroethane	10	
Mitrobenzene	10	
Isophorone	10	
2-Nitrophenol	10	
2,4-Dimethylphenol	10	
Benzoic acid	50	
bis(2-Chloroethoxy)methane	10	
2,4-Dichlorophenol	10	
1,2,4-Trichlorobenzene	10	
Naphthalene	10	
6-Chloroaniline	10	
Hexachlorobutadiene	10	
4-Chloro-3-Methylphenol	10	
2-Methylnaphthalene	10	
Hexachlorocyclopentadiene	10	
2,4,6-Trichlorophenol	10	
2,4,5-Trichlorophenol	50	
2-Chloronaphthalene	10	
2-Nitroaniline	50	
Dimethyl phthalate	10	
Acenaphthylene	10	
2,6-Dinitrotoluene	10	

PROJECT: Plattsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

10 Aug 89

Summary Table

SAMPLE ID:	16SW319XXX02XX
LAB NUMBER:	230840
DATE SAMPLED:	11/17/88
DATE SAMPLE PREP.:	11/23/88
DATE SAMPLE ANALYZED:	12/03/88
MATRIX:	Water
SEMI-VOLATILE ORGANIC COMPOUNDS CRDL	UNITS: ug/L
3-Nitroaniline	50
Acenaphthene	10
2,4-Dinitrophenol	50
4-Nitrophenol	50
Dibenzofuran	10
2,6-Dinitrotoluene	10
Diethyl phthalate	10
4-Chlorophenyl-phenylether	10
Fluorene	10
4-Nitroaniline	50
4,6-Dinitro-2-methylphenol	50
N-Nitrosodiphenylamine	10
4-Bromophenyl-phenylether	10
Hexachlorobenzene	10
Pentachlorophenol	50
Phenanthrene	10
Anthracene	10
Di-n-butyl phthalate	10
Fluoranthene	10
Pyrene	10
Butylbenzyl phthalate	10
3,3'-Dichlorobenzidine	20
Benz(a)anthracene	10
Chrysene	10
bis(2-Ethylhexyl)phthalate	10
Di-n-octyl phthalate	10
Benz(b)fluoranthene	10
Benz(c)fluoranthene	10
Benz(a)pyrene	10
Indeno(1,2,3-cd)pyrene	10
Dibenzo(a,h)anthracene	10
Benzog(h,i,)perylene	10

Dilution Factor 1

Laboratory Method Blank
Associated Field BlanksGH031502C08
0001000XXX01XX
00P4000XXX01XX
00MM001XXX01XX

Dictionary Table

19-Aug-89

Summary Table

PESTICIDES/PCB COMPOUNDS UNITS: ug/L	CRDL
alpha-BHC	0.05
beta-BHC	0.05
delta-BHC	0.05
gamma-BHC (Lindane)	0.05
Heptachlor	0.05
Aldrin	0.05
Heptachlor epoxide	0.05
Endosulfan I	0.05
Dieldrin	0.10
Endrin	0.10
Endosulfan II	0.10
4,4'-DDF	0.10
Endosulfan sulfate	0.10
4,4'-DDI	0.10
Methoxychlor	0.50
Endrin ketone	0.10
alpha-Chlordane	0.50
gamma-Chlordane	0.50
Toxaphene	1
Aroclor-1016	0.50
Aroclor-1221	0.50
Aroclor-1232	0.50
Aroclor-1242	0.50
Aroclor-1248	0.50
Aroclor-1254	1
Aroclor-1260	1

Dilution Factor

Laboratory Method Blank
Associated Field Blanks231477
0001001XXX01XX
00P4001XXX01XX
00RH001XXX01XX

PROJECT: Plattsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

METALS UNITS: ug/L	ANALYTICAL METHOD	CRDL
Aluminum	P	200
Antimony	P	60
Arsenic	F	10
Barium	P	200
Beryllium	P	5
Cadmium	P	5
Calcium	P	52500
Chromium	P	10
Cobalt	P	50
Copper	P	25
Iron	P	100
Lead	P/F	5
Magnesium	P	5000
Manganese	P	15
Mercury	CV	0.2
Nickel	P	40
Potassium	P	5000
Selenium	F	5
Silver	P	10
Sodium	P	5000
Thallium	F	10
Vanadium	P	50
Zinc	P	20

Laboratory Method Blank
Associated Field Blanks

15689C
00W001XXX01XX 00W001XXX01XX
00D001XXX001XX 00D001XXX01XX
00P001XXX01XX 00P001XXX01XX

PROJECT: Pittsburgh

WATER SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

10-Aug-89

PROJECT: Plattsburgh

SURFACE WATER SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

Summary Table

SAMPLE ID: 14SUJ19XXX02XX

LAB NUMBER: 230771

DATE SAMPLED: 11/17/88

DATE SAMPLE PREP.: 11/23/88

DATE SAMPLE ANALYZED: 11/25/88

MATRIX: Water

UNITS: mg/L

DL

Petroleum Hydrocarbons

1

Dilution Factor

Laboratory Method Blank
Associated Equipment Blank
Associated Field Blanks

2716-21MB
005B101XXX02XX*
00D1001XXX01XX
00PW001XXX01XX
00MMH001XXX01XX

10-Aug-89

Summary Table

	SAMPLE ID:	14SDJ10XXX02XX	14SDJ11XXX02XX	14SDJ12XXX02XX	14SDJ13XXX02XX	14SDJ14XXX02XX	14SDJ15XXX02XX	14SDJ16XXX02XX
LAB NUMBER:	230773	230777	230784	230782	230779	230800	230805	230794
DATE SAMPLED:	11/16/88	11/16/88	11/16/88	11/16/88	11/16/88	11/17/88	11/17/88	11/16/88
DATE SAMPLE PREP:	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88
DATE SAMPLE ANALYZED:	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS	CRDL							
UNITS: ug/kg								
Chloromethane	10							
Bromomethane	10							
Vinyl Chloride	10							
Chloroethane	10							
Methylene Chloride	5							
Acetone	10	130						
Carbon Disulfide	5							
1,1-Dichloroethene	5							
1,1-Dichloroethane	5							
1,2-Dichloroethene (total)	5							
Chloroform	5							
1,2-Dichloroethane	5							
2-Butanone	10							
1,1,1-Trichloroethane	5							
Carbon Tetrachloride	5							
Vinyl Acetate	10							
Bromodichloromethane	5							
1,2-Dichloropropane	5							
Cis-1,3-Dichloropropene	5							
Trichloroethene	5							
Dibromoethane	5							
1,1,2-Trichloroethane	5							
Benzene	5							
Trans-1,3-Dichloropropene	5							
Bromoform	5							
4-Methyl-2-Pentanone	10							
2-Hexanone	10							
Tetrachloroethene	5							
1,1,2,2-Tetrachloroethane	5							
Toluene	5							
Chlorobenzene	5							
Ethylbenzene	5							
Styrene	5							
Xylenes (Total)	5							
Dilution Factor	1	1	1	1	1	1	1	1
Percent Solids	61	50	71	82	77	76	75	91

Laboratory Method Blank GH031200A18 GH031200A18 GH031200A18
 Associated Equipment Blank 00SB100XXX02XX 00SB100XXX02XX 00SB100XXX02XX* GH031200A18
 Associated Field Blanks 00MH001XXX01XX 00MH001XXX01XX 00MH001XXX01XX 00SB100XXX02XX* GH031200A18
 00DI1001XXX01XX 00DI1001XXX01XX 00DI1001XXX01XX 00MH001XXX01XX 00MH001XXX01XX
 00PR4001XXX01XX 00PR4001XXX01XX 00PR4001XXX01XX 00DI1001XXX01XX 00DI1001XXX01XX
 00PR4001XXX01XX 00PR4001XXX01XX 00PR4001XXX01XX 00PR4001XXX01XX 00PR4001XXX01XX

Summary Table

PROJECT: Pittsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area
09-Aug-89

Summary Table

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRL	
Chloromethane	10	
Bromoethane	10	
Vinyl Chloride	10	
Chloroethane	10	
Methylene Chloride	5	
Acetone	10	
Carbon Disulfide	5	
1,1-Dichloroethene	5	
1,1-Dichloroethane	5	
1,2-Dichloroethene (total)	5	
Chloroform	5	
1,2-Dichloroethane	5	
2-Butanone	10	
1,1,1-Trichloroethane	5	
Carbon Tetrachloride	5	
Vinyl Acetate	10	
Bromodichloromethane	5	
1,2-Dichloropropane	5	
Cis-1,3-Dichloropropene	5	
Trichloroethene	5	
Dibromoethane	5	
1,1,2-Trichloroethane	5	
Benzene	5	
Trans-1,3-Dichloropropene	5	
Bromoform	5	
4-Methyl-2-Pentanone	10	
2-Hexanone	10	
Tetrachloroethene	5	
1,1,2,2-Tetrachloroethane	5	
Toluene	5	
Chlorobenzene	5	
Ethylbenzene	5	
Styrene	5	
Xylenes (Total)	5	
Dilution Factor	1	
Percent Solids	.3	
Laboratory Method Blank	GHO31200A18	
Associated Equipment Blank	0058000X02XX	
Associated Field Blanks	0040001XX01XX	
	0000001XX01XX	
	00P4001XX01XX	

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

SAMPLE ID:		14SD310XXX02XX	14SD311XXX02XX	14SD312XXX02XX	14SD313XXX02XX	14SD314XXX02XX	14SD315XXX02XX	14SD316XXX02XX
LAB NUMBER:	230773	230777	230784	230782	230779	230800	230805	230794
DATE SAMPLED:	11/16/88	11/6/88	11/16/88	11/16/88	11/16/88	11/17/88	11/17/88	11/16/88
DATE SAMPLE PREP.:	11/26/88	11/26/88	11/25/88	11/25/88	11/26/88	11/25/88	11/25/88	11/25/88
DATE SAMPLE ANALYZED:	12/03/88	12/03/88	12/04/88	12/03/88	12/04/88	12/04/88	12/04/88	12/04/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS		CRDL						
Phenol	330							
bis(2-Chloroethyl)ether	330							
2-Chlorophenol	330							
1,3-Dichlorobenzene	330							
1,4-Dichlorobenzene	330							
Benzyl Alcohol	330							
1,2-Dichlorobenzene	330							
2-Methylphenol	330							
bis(2-Chloroisopropyl)ether	330							
4-Methylphenol	330							
N-Nitroso-di-n-propylamine	330							
Heptachloroethane	330							
Nitrobenzene	330							
Isophorone	330							
2-Nitrophenol	330							
Benzolic acid	330							
2,4-Dimethylphenol	1600							
bis(2-Chloroethoxy)methane	330							
2,4-Dichlorophenol	330							
1,2,4-Trichlorobenzene	330							
Naphthalene	330							
6-Chloronaniline	330							
Hexachlorobutadiene	330							
4-Chloro-3-Methylphenol	330							
2-Methylnaphthalene	330							
Hexachlorocyclopentadiene	330							
2,4,6-Trichlorophenol	330							
2-Chloronaphthalene	1600							
2-Nitroaniline	1600							
Dimethyl phthalate	330							
Acenaphthylene	330							
2,6-Dinitrotoluene	330							

Summary Table

	SAMPLE ID:	14SD310XXX02XX	14SD311XXX02XX	14SD312XXX02XX	14SD313XXX02XX	14SD314XXX02XX	14SD315XXX02XX	14SD316XXX02XX
LAB NUMBER:	230773	230777	230784	230782	230779	230800	230805	230794
DATE SAMPLED:	11/16/88	11/16/88	11/16/88	11/16/88	11/16/88	11/17/88	11/17/88	11/16/88
DATE SAMPLE PREP.:	11/26/88	11/26/88	11/26/88	11/26/88	11/26/88	11/25/88	11/25/88	11/25/88
DATE SAMPLE ANALYZED:	12/03/88	12/03/88	12/04/88	12/03/88	12/03/88	12/04/88	12/04/88	12/04/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS
CRDL
UNITS: ug/kg

3-Nitroaniline	1600							
Acenaphthene	330							
2,6-Dinitrophenol	1600							
4-Nitrophenol	1600							
oBenzofuran	330							
2,4-Dinitrotoluene	330							
Diethylphthalate	330							
4-Chlorophenyl-phenyl ether	330							
Fluorene	330							
4-Nitroaniline	1600							
4,6-Dinitro-2-methylphenol	1600							
N-Nitrosodiphenylamine	330							
4-Bromophenyl-phenylether	330							
Hexachlorobenzene	330							
Pentachlorophenol	1600							
Phenanthrene	330							
Anthracene	330							
Di-n-butylphthalate	330							
Fluoranthene	330							
Pyrene	330							
Butylbenzylphthalate	330							
3,3'-Dichlorobenzidine	660							
Benz(a)Anthracene	330							
Chrysene	330							
bis(2-Ethylhexyl)phthalate	330							
Di-n-octylphthalate	330							
Benzol(b)Fluoranthene	330							
Benzol(k)Fluoranthene	330							
Benzol(s)Pyrene	330							
Indeno(1,2,3-cd)pyrene	330							
Oibenzo(a,h)anthracene	330							
Benzol(g,h,i)perylene	330							
Dilution Factor	1							
Percent Solids	61	50	71	1	1	82	77	76

X = Indistinguishable isomers, * = Held for analysis.

Laboratory Method Blank	GHO31892A15	GHO31757C21	GHO31757C21	GHO31757C21
Associated Equipment Blank	00SB100XXX02XX	01SB100XXX02XX	01SB101XXX02XX*	01SB100XXX02XX
Associated Field Blanks	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX
	00D1001XXX01XX	00D1001XXX01XX	00D1001XXX01XX	00D1001XXX01XX
	00PW001XXX01XX	00PW001XXX01XX	00PW001XXX01XX	00PW001XXX01XX

PROJECT: Pittsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3/ECD Gold Course and Associated Drainage Area

no. 81-110

Summary Table

SEMI-VOLATILE ORGANIC COMPOUNDS					
SAMPLE ID:	LAB NUMBER:	DATE SAMPLED:	DATE SAMPLE PREP.:	DATE SAMPLE ANALYZED:	MATRIX:
14SD317XX02XX	230795	11/16/88	11/25/88	12/04/88	Soil
14SD318XX02XX	230797	11/16/88	11/25/88	12/04/88	Soil
14SD319XX02XX	230809	11/17/88	11/27/88	12/06/88	Soil
14SD320XX02XX	230808	11/17/88	11/27/88	12/06/88	Soil
14SD321XX02XX	230798	11/17/88	11/27/88	12/06/88	Soil
14SD322XX02XX	230807	11/17/88	11/27/88	12/06/88	Soil
14SD323XX02XX	230796	11/16/88	11/25/88	12/03/88	Soil
14SD324XX02XX	230778	11/16/88	11/25/88	12/03/88	Soil
Phenol	330				
bis(2-Chloroethyl)ether	330				
2-Chlorophenol	330				
1,3-Dichlorobenzene	330				
1,4-Dichlorobenzene	330				
Benzyl alcohol	330				
1,2-Dichlorobenzene	330				
2-Methylphenol	330				
bis(2-Chloroisopropyl)ether	330				
4-Methylphenol	330				
N-Nitro-di-n-propylamine	330				
Hexachloroethane	330				
Nitrobenzene	330				
Isophorone	330				
2-Nitrophenol	330				
2,4-Dimethylphenol	330				
Benzoic acid	1600				
bis(2-Chloroethoxy)methane	330				
2,4-Dichlorophenol	330				
1,2,4-Trichlorobenzene	330				
1,4-Dichlorobenzene	330				
4-Chloronaphthalene	330				
6-Chloronaphthalene	330				
Hexachlorobutadiene	330				
4-Chloro-3-Methylphenol	330				
2-Methylnaphthalene	330				
Hexachlorocyclopentadiene	330				
2,4,6-Trichlorophenol	330				
2,4,5-Trichlorophenol	1600				
2-Chloronaphthalene	330				
2-Nitroaniline	1600				
Dinitrophenol	330				
Acenaphthylene	330				
2,6-Dinitrotoluene	330				

Summary Table

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

SAMPLE ID:	14SD325XXX02XX
LAB NUMBER:	230790
DATE SAMPLED:	11/16/88
DATE SAMPLE PREP.:	11/25/88
DATE SAMPLE ANALYZED:	12/03/88
MATRIX:	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL
Phenol	330
bis(2-Chloroethyl)ether	330
2-Chlorophenol	330
1,3-Dichlorobenzene	330
1,4-Dichlorobenzene	330
Benzyl alcohol	330
1,2-Dichlorobenzene	330
2-Methylphenol	330
bis(2-Chloroisopropyl)ether	330
4-Methylphenol	330
N,N-Tetra-di-n-propylamine	330
Hexachloroethane	330
Nitrobenzene	330
Isophorone	330
2-Nitrophenol	330
2,4-Dimethylphenol	330
Benzoic acid	1600
bis(2-Chloroethoxy)methane	330
2,4-Dichlorophenol	330
1,2,4-Trichlorobenzene	330
Naphthalene	330
6-Chloronaphtalene	330
Hexachlorobutadiene	330
4-Chloro-3-Methyl phenol	330
2-Methylnaphthalene	330
Heptachlorocyclopentadiene	330
2,4,6-Trichlorophenol	330
2,4,5-Trichlorophenol	1600
2-Chloronaphthalene	330
2-Mitroniline	1600
Diethyl phthalate	330
Acenaphthylene	330
2,6-Dinitrotoluene	330

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3/GCD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	SAMPLE ID: 14SDJ25XXX02XX		
	LAB NUMBER: 230790	DATE SAMPLED: 11/16/88	DATE SAMPLE PREP.: 11/25/88
MATRIX: Soil	DATE SAMPLE ANALYZED: 12/03/88	CRDL	
3-Nitroaniline	1600		
Acenaphthene	330		
2,4-Dinitrophenol	1600		
4-Nitrophenol	1600		
Dibenzofuran	330		
2,4-Dinitrotoluene	330		
Diethylphthalate	330		
4-Chlorophenyl-phenyl ether	330		
Fluorene	330		
4-Nitroaniline	1600		
6,6-Dinitro-2-methylphenol	1600		
4-Nitrosodiphenylamine	330		
4-Bromophenyl phenyl ether	330		
Hexachlorobenzene	330		
Pentachlorophenol	1600		
Phenanthrene	330		
Anthracene	330		
Di-n-butylphthalate	330		
Fluoranthene	330		
Pyrene	330		
Butylbenzyl phthalate	330		
3,3'-Dichlorobenzidine	660		
Benz(a)Anthracene	330		
Chrysene	330		
bis(2-Ethylhexyl) phthalate	330		
Di-n-octyl phthalate	330		
Benz(b)fluoranthene	330		
Benz(k)fluoranthene	330		
Benz(a)Pyrene	330		
Indeno(1,2,3-cd)pyrene	330		
Dibenz(a,h)anthracene	330		
Benz(o,g,h,i,)perylene	330		
Dilution Factor		1	
Percent Solids		43	
Laboratory Method Blank			GHO31757C21
Associated Equipment Blank			019800000002XX
Associated Field Blanks			00W001XX001XX
			00D1001XX01XX
			00P4001XX01XX

PROJECT: Pittsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3 / GGD Golf Course and Associated Drainage Area

09-Aug-89

Summary Table

PROJECT: Parallelizing

SEDIMENTI SAMPLIE ANALYSIS - SP-3 / GCO Golf Course and Associated Drainage Area

D - A 143 - 65

PESTICIDES/PCB COMPOUNDS
UNITS: ug/kg CRDL

<i>Alpha</i> -BHC	8
<i>Beta</i> -BHC	8
<i>Delta</i> -BHC	8
<i>Gamma</i> -BHC (Lindane)	8
epichlorohydrin	8
l-drin	8
epichlorohydrin epoxide	8
endosulfan I	8
ieldrin	16
,4,-DDT	16
drin	16
endosulfan II	16
4,-DDO	16
endosulfan sulfate	16
4,-DDT	16
ethoxychlor	80
ketone	16
ph-a-chlordane	80
gamma - Chlordane	80
oxaphene	160
o-oclor-1016	80
o-oclor-1221	80
o-oclor-1232	80
o-oclor-1242	80
o-oclor-1248	80
o-oclor-1254	160
o-oclor-1260	160

Intercorrelation factor

Laboratory Method Blank
Associated Equipment Blank
Associated Field Blanks

Table

1

SAMPLE ID: 14SD325XXX02XX
LAB NUMBER: 230790
DATE SAMPLED: 11/16/88
DATE SAMPLE PREP.: 11/25/88
DATE SAMPLE ANALYZED: 12/10/88
MATRIX: Soil

PESTICIDES/PCB COMPOUNDS MFLIS: ug/kg

Dilution Factor

Laboratory Method Blank

231757
000581000XXXXX02XX
0000010001XXXX01XX
0000010001XXXX01XX

09-Aug-89

Summary Table

SAMPLE ID:	14SD315XXX02XX	14SD315XXX02DX
LAB NUMBER:	230801	230806
DATE SAMPLED:	11/17/88	11/17/88
DATE SAMPLE PREP.:	11/29/88	11/29/88
DATE SAMPLE ANALYZED:	12/03/88	12/03/88
MATRIX:	Soil	Soil

METALS UNITS: mg/kg	ANALYTICAL METHOD	CRDL	
Aluminum	P	40	5790 J
Antimony	P	12	-
Arsenic	F	2	-
Barium	P	40	-
Beryllium	P	1	-
Cadmium	P	1	-
Calcium	P	1000	1890
Chromium	P	2	11
Cobalt	P	10	-
Copper	P	5	-
Iron	P	20	15000
Lead	P/F	1	7.5
Magnesium	P	1000	1370 J
Manganese	P	3	501 J
Mercury	CV	0.1	-
Nickel	P	8	-
Potassium	P	1000	-
Selenium	F	1	-
Silver	P	2	-
Sodium	P	1000	-
Thallium	F	2	-
Vanadium	P	10	18 J
Zinc	P	4	65 J
Percent Solids		72	74

Laboratory Method Blank
Associated Field Blanks

15689C	15689C
00MH001XXX01XX	00MH001XXX01XX
00D1001XXX01XX	00D1001XXX01XX
00PW001XXX01XX	00PW001XXX01XX

3

PROJECT: Plattsburgh

DESIGNATED SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

10-Aug-89

Summary Table

MISCELLANEOUS COMPOUNDS	DL
Total Organic Compounds	5

Units: mg/kg

Total Solids, x

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

Summary Table

SAMPLE ID:	14SD317XXX02XX	14SD318XXX02XX	14SD319XXX02XX	14SD320XXX02XX	14SD321XXX02XX	14SD322XXX02XX	14SD323XXX02XX	14SD324XXX02XX
LAB NUMBER:	230696	230701	230715	230716	230712	230702	230697	230680
DATE SAMPLED:	11/16/88	11/16/88	11/17/88	11/17/88	11/17/88	11/16/88	11/16/88	11/16/88
DATE SAMPLE PREP.:	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88
DATE SAMPLE ANALYZED:	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88	12/16/88
MATRIX:	Soil							

MISCELLANEOUS COMPOUNDS DL

Total Organic Compounds	S	3900	35000	63000	14000	45000	12000	15000	34000
Units: mg/kg									
Total Solids, %	69	40	33	73	45	67	64	75	

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

10-Aug-89

Summary Table

SAMPLE ID: 14SD325XXX02XX
LAB NUMBER: 230692
DATE SAMPLED: 11/16/88
DATE SAMPLE PREP.: 12/16/88
DATE SAMPLE ANALYZED: 12/16/88
MATRIX: Soil

MISCELLANEOUS COMPOUNDS	DL
Total Organic Compounds	5
Units: mg/kg	24000
Total Solids, %	42

Summary Table

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

Summary Table

	UNITS: mg/kg	Dl
Petroleum Hydrocarbons	25	120
Dilution Factor	1	10
Percent Solids	69	31

Petroleum Hydrocarbons

LAB NUMBER:	14SD317XXX02XX	14SD318XXX02XX	14SD319XXX02XX	14SD320XXX02XX	14SD321XXX02XX	14SD322XXX02XX	14SD323XXX02XX	14SD324XXX02XX
DATE SAMPLED:	230761	230764	230751	230750	230749	230745	230742	230736
DATE SAMPLE PREP.:	11/16/88	11/16/88	11/17/88	11/17/88	11/17/88	11/16/88	11/16/88	11/16/88
DATE SAMPLE ANALYZED:	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88
MATRIX:	Soil							

LAB NUMBER:	14SD317XXX02XX	14SD318XXX02XX	14SD319XXX02XX	14SD320XXX02XX	14SD321XXX02XX	14SD322XXX02XX	14SD323XXX02XX	14SD324XXX02XX
DATE SAMPLED:	230761	230764	230751	230750	230749	230745	230742	230736
DATE SAMPLE PREP.:	11/16/88	11/16/88	11/17/88	11/17/88	11/17/88	11/16/88	11/16/88	11/16/88
DATE SAMPLE ANALYZED:	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88	11/23/88
MATRIX:	Soil							

Laboratory Method Blank	2716-64B							
Associated Equipment Blank	01SB100XXX02XX	00SB101XXX02XX*	00SB101XXX02XX*	00SB101XXX02XX*	01SB100XXX02XX	01SB100XXX02XX	01SB100XXX02XX	00SB100XXX02XX
Associated Field Blanks	0001001XXX01XX							
	00PW001XXX01XX							
	00NNH001XXX01XX							

Laboratory Method Blank	2716-64B							
Associated Equipment Blank	01SB100XXX02XX	00SB101XXX02XX*	00SB101XXX02XX*	00SB101XXX02XX*	01SB100XXX02XX	01SB100XXX02XX	01SB100XXX02XX	00SB100XXX02XX
Associated Field Blanks	0001001XXX01XX							
	00PW001XXX01XX							
	00NNH001XXX01XX							

10-Aug-89

PROJECT: Plattsburgh

SEDIMENT SAMPLE ANALYSIS - SP-3 / GCD Golf Course and Associated Drainage Area

10-Aug-89

Summary Table

	DL
Petroleum Hydrocarbons	25
Dilution Factor	10
Percent Solids	42

UNITS: mg/kg

Laboratory Method Blank
Associated Equipment Blank
Associated Field Blanks

2716-6&B
01SB10XX02XX
0001001XXX01XX
00PM001XXX01XX
00MH001XXX01XX

APPENDIX C

Drainage Flow Study Report (1991)

(Analytical data as reported by ABB Environmental Services)

FIGURE C-1

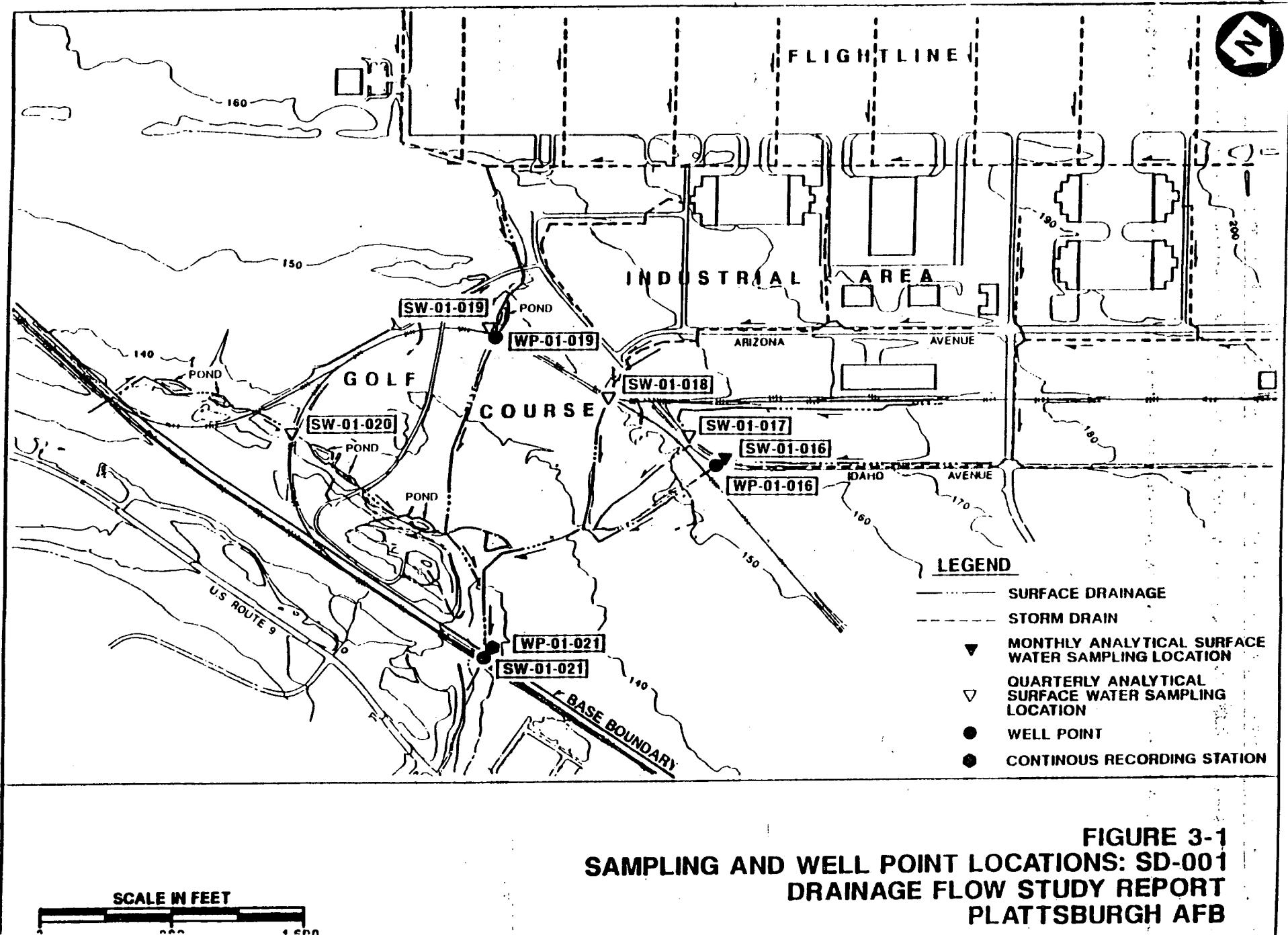


TABLE 3-1
SUMMARY OF ANALYTICAL RESULTS: SD-001

DRAINAGE FLOW STUDY REPORT
PLATTSBURGH AFB

SITE ID	ANALYTE DETECTED	ROUND	1Q	2	3	4Q	5	6	7	8Q	9	10	11	12Q		
		Detection Limit	DATE	10/31/89	12/06/89	12/27/89	02/06/90	02/27/90	03/29/90	05/09/90	06/05/90	06/27/90	08/07/90	08/28/90	10/11/90	
VOA		CONCENTRATION (µg/L)														
SW-01-016 (5) 1,2-DICHLOROETHENE (TOTAL)		6 NS NS - - - - - - - - - -														
SVOA		CONCENTRATION (µg/L)														
SW-01-016 (2) 4-METHYLPHENOL		4 NS NS - - - - - - - - - -														
(2) 2-METHYLNAPHTHALENE		4 NS NS - - - - - - - - - -														
(2) BIS(2-ETHYLHEXYL)PHTHALATE		92 NS NS - - - - - - - - - -														
(2) NAPHTHALENE		- NS NS - - - - - - - - - -														
(2) FLUORENE		- NS NS - - - - - - - - - -														
(2) PHENANTHRENE		- NS NS - - - - - - - - - -														
TICs		CONCENTRATION (µg/L)														
SW-01-016 (2*) UNKNOWN HYDROCARBONS		NS NS NS NS NS NS NS NS 2649J - - -														
(2*) DIMETHYLNAPHTHALENE ISOMER		NS NS NS NS NS NS NS NS 120J - - -														
(2*) 2-BUTOXYETHANOL		NS NS NS NS NS NS NS NS - - - - -														
(2*) 1-METHYNAPHTHALENE		NS NS NS NS NS NS NS NS - - - - -														
(2*) DIMETHYLNAPHTHALENE ISOMER		NS NS NS NS NS NS NS NS - - - - -														
SW-01-016RE (2*) 2-BUTOXYETHANOL		NS NS NS NS NS NS NS NS - - - - -														
(2*) 1-METHYNAPHTHALENE		NS NS NS NS NS NS NS NS - - - - -														
(2*) DIMETHYLNAPHTHALENE ISOMER		NS NS NS NS NS NS NS NS - - - - -														
(2*) TETRAHYDROMETHYLNAPHTHALENE		NS NS NS NS NS NS NS NS - - - - -														
(2*) TETRAHYDRODIMETHYLNAPHTHALENE		NS NS NS NS NS NS NS NS - - - - -														
SW-01-019 (2*) DIMETHYLETHYLPHENOL ISOMER		NS NS NS NS NS NS NS NS - - - - -														
SW-01-020 (2*) UNKNOWN HYDROCARBONS		NS NS NS NS NS NS NS NS - - - - -														
HARDNESS		CONCENTRATION (mg/L) as CaCO₃														
SW-01-016 (1)		210 NS NS 100 190 220 205 205 200 180 2.3 220														
SW-01-018 (1)		200 NS NS 190 NS NS NS 300 NS NS NS 180														
SW-01-019 (1)		200 NS NS 170 NS NS NS 179 NS NS NS 210														
SW-01-020 (1)		120 NS NS 120 NS NS NS 119 NS NS NS 120														
SW-01-021 (1)		210 200 200 190 180 200 180 191 180 87 41 210														
GLYCOL		CONCENTRATION (µg/L)														
SW-01-021 (75)		NS NS NS NS NS NS NS NS NS 120 NS 530														

NOTES: NS is defined as not sampled.

- is defined as not detected.

J indicates an estimated value below detection limit.

* indicates an approximation based on a response factor of 1.

Q is used to denote a quarterly sampling event.

µg/L=micrograms per liter

mg/L=milligrams per liter